FIG. 1

CONTENT

RELATIONAL DATA
COLLABORATIVE DATA
E-MAIL
CALENDAR
ADDRESS BOOK
TO-DO LIST
MEMOS
WORKFLOW INFORMATION
DATABASE UPDATES
SOFTWARE DOWNLOAD
BACKUP/RECOVERY

CONNECTIVITY SERVICES

CONNECTION SERVICES

SYNCHRONIZATION SERVER

APPPLICATION SERVER

DATA SERVER

DATABASE

DATABASE

HANDHELD DEVICE

FIG. 2

FIG. 3

101 — QUERY (SQL)

103

QUERY COMPILER

111 — TRANSLATE SQL TO FUNCTIONAL LANGUAGE

115 — TRANSLATE FUNCTIONAL LANGUAGE TO IMPERATIVE LANGUAGE

117 — COMPILE IMPERATIVE LANGUAGE TO ASSEMBLER

119 — GENERATE MACHINE LANGUAGE QUERY

105 — QUERY EXECUTES ON DATABASE TABLES

FIG. 4

101

QUERY (SQL)

103

QUERY COMPILER

112 — TRANSLATE SQL TO FUNCTIONAL LANGUAGE EXPRESSED AS AN IMPERATIVE LANGUAGE

117 — COMPILE IMPERATIVE LANGUAGE TO ASSEMBLER

119 — GENERATE MACHINE LANGUAGE QUERY

105 — QUERY EXECUTES ON DATABASE TABLES

FIG. 5

101

QUERY (SQL)

103

QUERY COMPILER

MAP SQL QUERIES TO FUNCTIONAL LANGUAGE EXPRESSED IN IMPERATIVE LANGUAGE — 113

COMPILE IMPERATIVE LANGUAGE TO ASSEMBLER — 117

GENERATE MACHINE LANGUAGE QUERY — 119

QUERY EXECUTES ON DATABASE TABLES — 105

SVL920010034US1
Grust, et al.
A SMALL-FOOTPRINT APPLICATIVE QUERY INTERPRETER
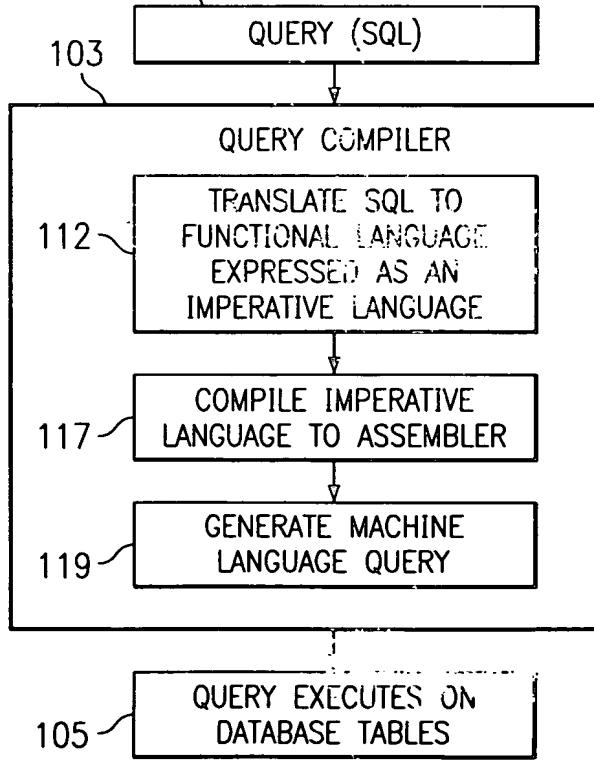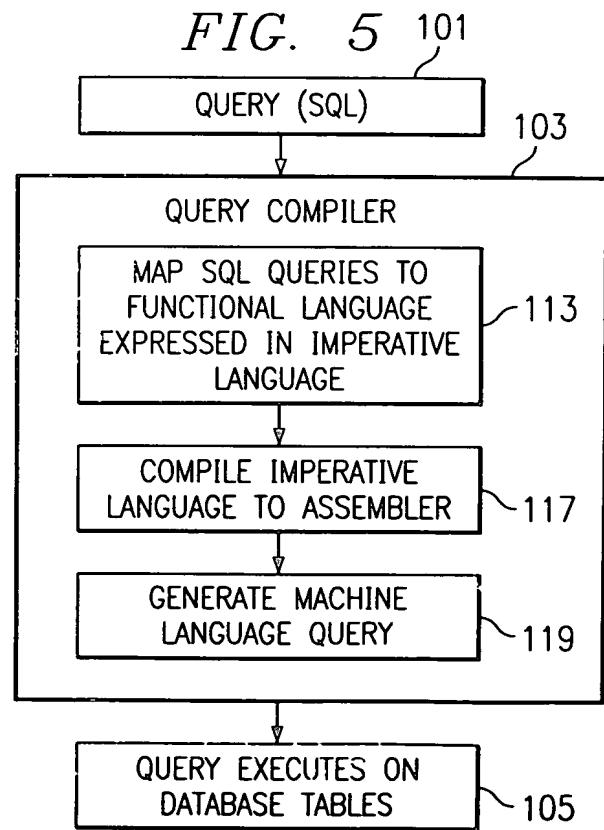METHOD, SYSTEM AND PROGRAM PRODUCT

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FIG. 6

SELECT x, b FROM S, T WHERE y = a
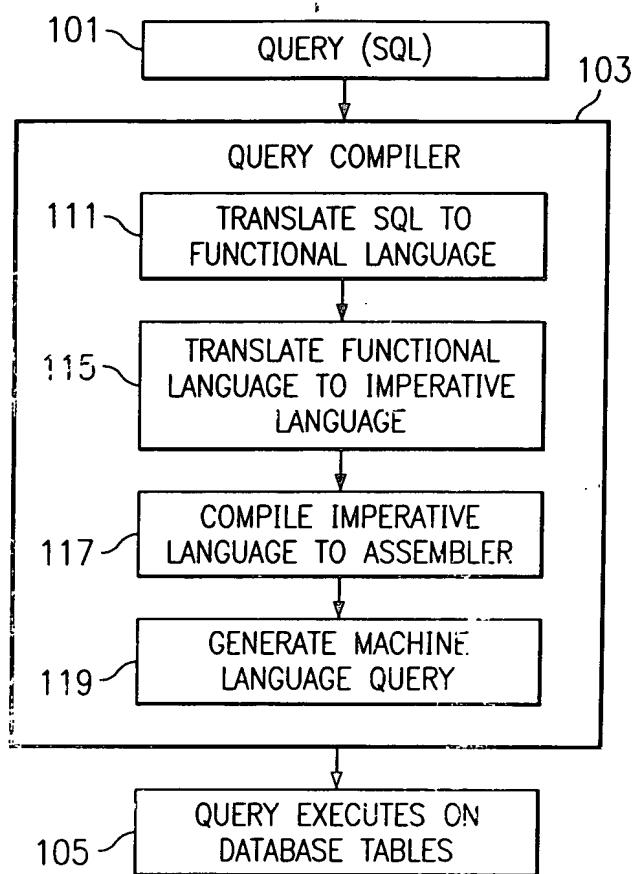
```
                    SELECT x,b
                   /          \
              FROM             WHERE
             /    \              |
       TABLE S    TABLE T        =
                               /   \
                              y     a
```

FIG. 7

SELECT x, b FROM S, T WHERE y > a
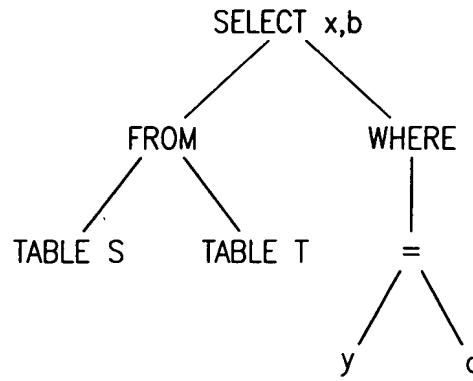
```
                    SELECT x,b
                   /          \
              FROM             WHERE
             /    \              |
       TABLE S    TABLE T        >
                               /   \
                              y     a
```
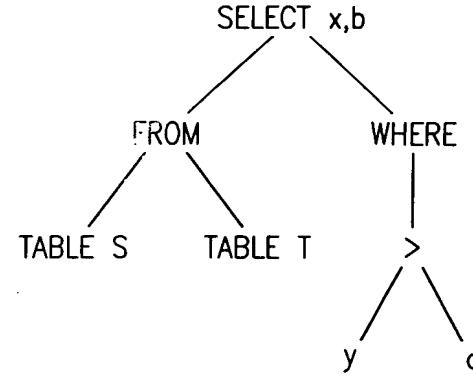
FIG. 8

SELECT * FROM S ORDER BY x

```
            SELECT
          /   |    \
      FROM   SORT    *
        |     |
    TABLE S   x
```
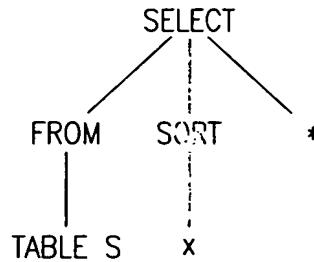
FIG. 9

SELECT SUM (y), COUNT(*), FROM S

```
              SELECT
             /      \
         FROM        SUM, COUNT
          |             |
      TABLE S           y
```
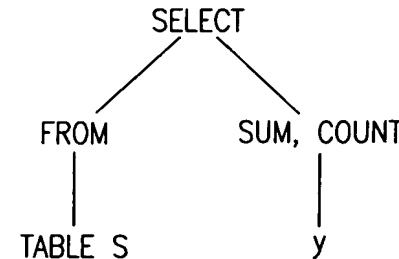
FIG. 10

SELECT (SELECT (SUM A)) FROM t WHERE a > 1) FROM S

```
                    SELECT
                   /      \
              FROM          SUBQUERY
               |            /      \
          TABLE S      TABLE T      SUM
                          |          |
                        T > 1        a
```
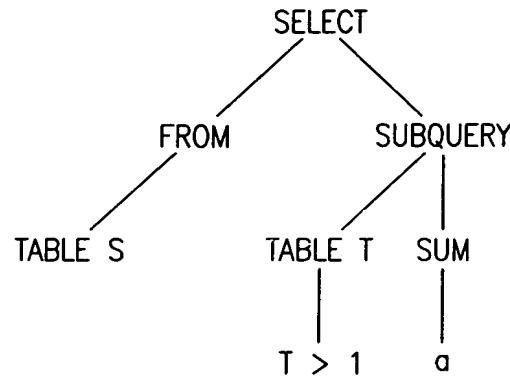
FIG. 11

SELECT COUNT (z), x,y FROM S, GROUP BY x,y

```
                SELECT
                |    \
              GROUP    +
             / |  \      \
         SORT  MOV  [COUNT]
        /  |    VARIABLE S.#1
   TABLE S  s        |
                 VARIABLE S.#0
```

FIG. 12

SELECT x + y FROM S

```
            SELECT
           /      \
      TABLE S      ADD
                  /   \
                 x     y
```
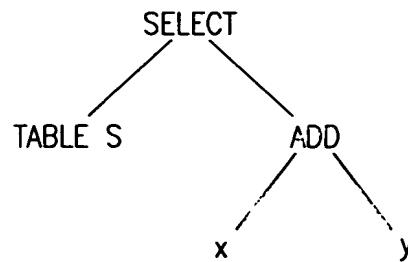
FIG. 13

SELECT y − z FROM S

```
            SELECT
           /      \
      TABLE S      −
                  / \
                 xy  y
```